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PROTECTION OF PIECE RATE

Piece rate is the leading variety of those forms of industrial remuneration which are known collectively as "payment by results." Under each of these methods in contrast to time wage the performance of the workman is measured at frequent intervals and he is paid accordingly. He thus works for himself as well as for the employer and has a direct incentive to "take up the slack" on his work, which last may often be accomplished through exercise of ingenuity as well as through greater exertion. Under time wage the advantage or gain from taking up slack accrues solely to the employer, and the only incentive that the workman has to create that gain (apart from any contingent participation in the profits or the fear of discharge) is the indirect or generalized incentive of a possible future advance of his rate of pay or promotion to a higher position. Day by day and job by job as he goes along, the typical workman remunerated by the hour is a hireling paid for his time, not a tradesman paid for his product, and any reward for well-doing is too remote and contingent to have full psychological effect. "Payment by results" dignifies labor by making the workman to a degree his own master and on each job it has direct psychological effect with respect to zeal of performance. This is the theory of payment by results, but unfortunately the application of it has been such as to bring about much discontent and bitterness in the industrial world, and to cause widespread "limitation of output" or just the opposite of taking up slack.

Methods of wage payment by results fall into three main classes: the "bonus" method (including differential piece rate), the "premium" method (including some bonus schemes falsely so called), and ordinary piece rate. All these methods have several sub-varieties. Piece rate is used in combination with guaranteed time wage in several different ways; there are a number of different forms of the premium method and of the bonus method. Even if a few distinctive types alone were described, the technicalities involved would make this paper unduly long and complex. My purpose in

writing it will therefore be best served by confining myself to a discussion of "straight" piece rate, that is, the payment of a fixed amount of money, irrespective of the time actually taken, for each unit of product counted, measured, or weighed.

The leading elements of piece rate are revealed when we consider what is done in "setting a rate" or "pricing a job" to be paid for by this method.

1. There is the more or less complete definition of the job. The job is, or should be, a certain operation on a certain "part" or kind of material, performed by hand or by machine, and there may be certain appliances to facilitate the work, such as jigs or other tools. Of course it makes a great difference what machines, run at what speed, working on what quality of material, and in what quantity. The workman cannot get his hand in as well on short jobs frequently changed as on long jobs changed infrequently. Piece rate is not necessarily confined to "repetition work," but, as is well known, it fits best that class of manufacturing.

2. There is the determination of the approximate time it will take to do the job, that is, usually not the time for the individual piece but for the whole number of pieces (or yards or pounds) to be done together as one batch or lot. For example, five hours is estimated to be the time required to do, working briskly, a lot of 500 pieces.

3. There is taken into consideration the grade of labor proper for the job and the hourly wage rate of that grade: for example, for this job a grade of labor that calls for weekly earnings of \$22 in a 55-hour week and therefore a time rating or base wage of 40 cents an hour. (If the working hours per week were 44, then for this \$22 a week grade of labor the time rating would be 50 cents an hour.) This base wage multiplied by the estimated time required or expected to be taken yields a rate or price for the job which is the equivalent of the standard of pay thus far assumed to be proper for the job. (Thus 5 times 40 cents equals \$2.) This last is called in shop terminology "time." If the workman should do just two of these jobs in a 10-hour day and be paid \$4, he would be said to be making his "time."

4. And finally it is taken into consideration (wherever piece rates are properly set) that the workman must be rewarded for the desired and expected "piece rate intensity of effort" or voluntary zeal in performance, which is the employer's object in going to the trouble of putting the job on piece rate and incurring con-

tinuing expense in counting and recording for the pay-roll after the rate is set. If the workman is to have opportunity to make only "time" on the job he will not exert himself to develop speed or ingenuity any more than if he were on ordinary day wage. He must have the incentive of an opportunity to make more than his time; there must be a bonus factor in the piece rate. Accordingly the piece rate equivalent of the base time wage (\$2 in this case) is increased by, say, 25 per cent to enable the workman to make *at the assumed proper speed of working* what is called "time and a quarter," \$2.50 for the job, or 50 cents an hour, or \$5 in a 10-hour day. This final revision of the job price sets a standard rate of remuneration for the job *as put on piece rate*, the unit of pay being adjusted to the unit of effort, which is what the workman sells in the last analysis rather than the physical product. If the employer, as sometimes happens, omits the bonus factor from the revised piece rate and depends for results upon "driving," he is attempting to get "piece rate intensity of effort" without paying for it.

The rest of the process of rate setting is merely arithmetic—dividing the revised job price by the number of pieces comprising the job or lot (500 in this case), which yields five tenths of a cent as the individual piece rate or piece price for doing this work. Thereafter, whatever the varying number of pieces the workman may do in any pay-roll period, the ascertained count is multiplied by five tenths of a cent and he finds the money in his pay envelope to correspond. It is obvious that as long as the rate stands unchanged the advantage from any "time saved" in doing the work, as compared with the estimated time required by which the rate was set, accrues solely to the workman. That is, the employer gains nothing on direct labor cost if the workman takes up more slack than was expected. The employer's gain in that event consists in a lower total cost by reason of the fixed charges or overhead being spread over a larger product, together with the further indirect advantages from prompt delivery to customers and other like considerations.

To sum up, the complicated structure of a piece rate properly set includes: (1) the definition of the job (not merely the name of the job but a statement of the controlling conditions under which the work is done); (2) the time-required basis; (3) the base time wage or hourly rating; (4) the bonus, or standard reward for effort, which the workman is expected to earn if the actual

time taken coincides with the time expected to be taken. The labor value of any "time saved" by a greater speed of working is to go to the workman as additional bonus.

The great source of trouble in the prevailing practice of piece rate is that the time required basis of the rate is usually, in fact almost always on new work, estimated far too liberally. There are a variety of reasons for this: for one thing, the desire to enable men new to the work to earn good pay from the start. (A commendable object that should be achieved by another method, by paying a learner's retaining fee.) But chief of all is the lack of proper definition of the job before the time estimate is made. Indeed, such is the usual absence of any attempt at adequate standardization of the job—predetermination of proper speed and feed of the machine, quality of the material, appliances to be used, motions of the workman—that the conditions under which the work is to be performed are quite in the air, and it is a euphemism to say that the necessary time to be taken is "estimated." It is merely guessed at, and even the guessing is not done with respect to anything that is definite. Accordingly, as soon as the workman becomes thoroughly habituated to the work and the job itself is "smoothed out," it is commonly found that it can be done easily in much less time than that embodied in the rate. If nothing holds the workman back from doing what he can do, he goes ahead taking up slack until presently there is such a saving of time that his earnings mount to "time and a third," "time and a half," "double time," or even more.

It is to be noted that such is the cumulative effect of doing work in the time saved and getting pay for it, that the workman's earnings for any pay period increase in accelerated ratio with the time saved. To earn "time and a half," even under piece rate with no bonus factor, it is not necessary for the workman to reduce his time of performance by 50 per cent of the time embodied in the rate, but by only 33 1-3 per cent of that time. If he should cut the time in half (not at all an uncommon accomplishment, even where the time is supposed to have been set "close"), his earnings when he is working consistently at that speed would become "double time." He would then repeat the job we figured above four times instead of twice in a 10-hour day, or would turn out 2,000 pieces and be paid for a day's work at four-tenths of a cent per piece, \$8 or double \$4, which was "time." But in the example before us the workman is entitled to five-tenths of a cent per piece, a rate

that contains a 25 per cent bonus factor. So, then, if he turns out 2,000 pieces a day instead of 1,000 (through a saving of time of 50 per cent) he will earn \$10 a day or "double time and a half," instead of the "time and a quarter" (\$5) that he was supposed to be able to earn. It is evident, therefore, that a bonus factor as high as 25 per cent cannot be embodied in a piece rate with prudence, unless the time-required basis be predetermined very accurately: and, in fact, so high a bonus factor would rarely be used where usual rate fixing methods are employed. Also it is clear that with or without a liberal bonus factor the root of the difficulty with piece rate is miscalculation of the time-required basis of the rate. Errors in favor of the workman in estimating the time required are obviously costly to the employer and must often result in extravagant earnings. And when such extravagant, "out-of-line" earnings do occur, the next thing that happens, of course, is that the piece rate is cut to reduce the workman's wages to what is reasonable. The opposite also frequently occurs by reason of the time required being estimated "short," entailing that under the rate established the workman cannot make even his "time." Piece rate is, in fact, a nicely balanced, unstable method of paying wages, requiring fine calculation and adjustment to give satisfactory results: and, under the prevailing hasty, inexact practice, the fine adjustment called for is made after the rate is set and "tried out" instead of previously as it should be. There are, to be sure, a considerable number of industries with well-established piece rate scales changed infrequently. But generally speaking there is a vast amount of tinkering to correct the error of badly set rates. Raising the rates to make them right does little harm; it is the lowering or "cutting" of the rates which works mischief—a mischief that can hardly be exaggerated, for it means the utter demoralization of the workman.

Before we proceed to further discussion of the effect of rate cutting upon the workman, let us first examine into the question of its justification. It is often alleged that an error of liberality in setting a piece rate is not costly to the employer, that he "doesn't lose anything by it" but even gains. Now of course if the employer had occasion to compare merely the performance and earnings of his own workmen in any class of piece work relatively to each other, it is true that the speediest and highest paid men of the group would be the most profitable man. The labor cost per unit of his product is no more than that of the slowest, and the

overhead expense per unit is much less. But the employer usually is compelled by competition to compare his pay-roll as a whole with those of his rivals. He cannot keep on paying extravagant wages and continue in business. If his rival has guessed better than he has in setting his piece rates, he must reduce his own so that the earnings of his men collectively will be in line with those of the rival. Moreover, the employer has occasion to make comparisons between different grades of piece rate workers, and between workmen and foremen, within his own establishment. If some of his workmen are earning what is right by piece rates properly set, and others are earning extravagant wages by piece rates that are improperly set, the effect will be jealousy and bickering. The earnings must be harmonized to keep the peace. Also it is a scandal, subversive of discipline and calling for remedy, when the extravagant piece rate earnings of workmen cause them to have more money in their pay envelopes than the foremen have in theirs. It therefore comes about that as long as errors are made in estimating the time basis of piece rates, piece rates will have to be cut. This statement is central to the main argument of this paper. Piece rates by and large in industry will have to be cut: there are reasons—ample, controlling, permanent reasons. It is of no use railing at employers and their rate-setters for their alleged “stupidity” in cutting rates. It is of no use preaching up the Golden Rule to industrial managers as a remedy for rate cutting. As long as rates are set as they usually are they will have to be cut.

But, say the proponents of “scientific management,” piece rates need not be “set as they usually are”; they may be and should be set by “time study” and then the rates can stand. Apart chiefly from overlooking the effects of competition in a changing world, this is a logical position. The idea is that by means of thorough standardization of the job, which always precedes a proper time study, and by the time study itself, the rate-setter ascertains in advance the amount of slack that can be taken up in doing the work and so discovers the exact time required. With that information he then sets a rate under which it is impossible for the workman to make extravagant, run-away earnings. Such is the confidence of scientific management men in the accuracy of time study (together with overlooking or minimizing the effect of changes in the competitive situation), that wherever piece rates are set by that method a definite promise is made in writing to the workmen on each job that the rate will never be cut, unless the job changes its character so that it becomes a new job.

The present writer is a believer in time study and has had direct experience with it. He is of the opinion that it holds much promise for the future betterment of industrial relations. Nevertheless, it has its limitations and does not invalidate the position taken above, that in industry in general, in the future as in the past, piece rates will have to be cut. For one thing the expense of time study, properly performed, places bounds to its extension in the field of industry. Also the accuracy of its methods and the permanency of its results, under actual working conditions in industry, are not as great as the theory of the device calls for. Under time study, errors are made in setting rates, sometimes serious errors, and it is therefore a dangerous practice to make in good faith definite written promises that the rate will "never" be cut "unless the nature of the job changes." And this last qualifying clause in the agreement presents a large opportunity for evasion on the part of the unscrupulous employer or his over-zealous rate setter. Anyone having the slightest acquaintance with the details of workshops knows that no end of "nibbling" of rates can be introduced through the expression "unless the nature of the job changes." I am aware that the danger here is guarded against in genuine scientific management shops by certain methods (the use of the so-called instruction cards), but these methods may fall into disuse through the carelessness of subordinates, and the honest purpose of the proprietor may not endure. In any shop after a time there may come a king who "knew not Joseph." In short, such is the effect of multitudinous details, technical and competitive change, carelessness, excessive zeal, and human greed, that time study methods cannot be depended upon to abolish rate cutting, even where the expense of those methods does not preclude their use. Rate cutting emerges from the nature of things industrial; neither old or new devices of rate setting can secure the inviolate maintenance of piece rates. The protection of piece rate (removal of the chief evil connected with piece rate) must therefore come about, not through vain attempts to abolish rate cutting, but through the adoption of appropriate methods safeguarding the interests of labor when rates are cut.

The effect of rate cutting, as now practiced without safeguards, upon the individual workman directly affected and upon the whole body of workmen throughout industry is lamentable. Whether the employer does it arbitrarily and above board, or whether he does it underhandedly by means of tricks and evasions,

either way its primary effect is virtually to fine the workman for ingenious and speedy work (as it inevitably appears to him) and to bring it about that he and his fellows do more work (deliver more units of effort) for less pay. By reason of rate cutting, as Sidney Webb has said, a "subtle degradation" goes on with respect to any standard rate, linking pay with effort, that the workmen seek to maintain. The secondary effect with respect to workmen is, of course, that they seek to safeguard their interests against this attack; and they do so by means of a whole system of reprisals. The characteristic form of these reprisals is deliberate limitation of output—purposeful "soldiering" in its various aspects. Also there is opposition to putting time work on piece rate, where it should be; and, furthermore, especially in England, there is opposition to proper analysis or "routing" of work which would lend itself to the introduction of piece rate. There are, of course, as already stated, some establishments where the evil of rate cutting has been at a minimum and where in consequence little limitation of output obtains. But the general situation in industry, both with and without labor organization, is one of widely ramifying, open or covert war against output, resulting in huge amounts of wealth-not-created. The evil of limitation of output is complicated with the lay-off evil (which has its own appropriate remedy); nevertheless its chief continuing cause is unsafeguarded rate cutting. The more intelligent workmen know, of course, that slow-work practices are no part of a constructive program of advance for labor; they do these things merely to meet the exigencies of the existing situation, as a counter-attack against an attack made on themselves.

And the great waste of industrial power and loss of wealth to society, including the workers, is not the only serious aspect of this warfare originating chiefly in the cutting of piece rates. From the great mass of chicaneries and injustice, about evenly divided between the two sides, emerges a lamentable and unnecessary degradation of the human spirit. It hurts all honorable workingmen in their self respect to practice limitation of output. Moreover, the bitterness that prevails in workshops between the workmen with the spirit of solidarity and the crass individualists, or so-called "piece rate hogs," is most regrettable. As one experienced and conservative labor spokesman, Mr. Portenar, has said: "A man shows his naked soul when he works at piece rate." The "chasers" and other stool pigeons that many employers use in their efforts

to circumvent the reprisals of labor increase the sum of hatred in the world in a way that is not necessary to get the world's work, rightly ordered, done. A workman has a right to a decent life in industry and society pays if he fails to get it.

And now to come to the conclusion of the whole matter. It is absurd for society, itself so large a sufferer, to let industry go on muddling in the slough of this piece rate difficulty unaided. With hundreds of millions, possibly billions, of lost wealth at stake, inconvenienced by strikes and other contingent evils, it is absurd for people at large to allow the parties in direct interest to "fight it out" in a war that has no ending. Society has pursued the hands-off policy in the past doubtless because it was thought that, such was the mass of details involved, the state would be incompetent to intervene to advantage. Also the serious difficulty and danger of governmental interference in any economic matter involving supply and demand has been appreciated. But it is clear that the state is competent to intervene in this matter of piece rate to advantage, avoiding the details and the ultimate economic determinations, by laying down fundamental rules of method and procedure. That is what the general body of commercial law does, and all it does. Why should industry in the aspect before us be allowed to continue to be a bear garden? Organized society, the state, should add to its concepts of law and conceive every industry to be "affected with a public interest" and enact appropriate regulations accordingly. Piece rate should be protected by law based on a general policy, as indicated above, of prescribing forms of procedure. No direct interference with matters properly determined by supply and demand (such as the base time wage) ought to be undertaken; simply the substitution of definition and publicity for indefiniteness and secrecy.

Let it be enacted into law, and the means of enforcement provided, that in every shop where piece rates are used:

1. A list of rates shall be published showing not only the rates themselves but the "elements" from which they are derived—the definition of the job, the time-required basis, the base time wage, and the amount of the bonus factor.

2. A statistical accounting shall be kept of the earnings (or performance record) of the individual workmen under each rate, and audited at stated intervals.

3. A statement of the period during which each rate shall stand

without revision downward shall be made a part of each piece rate agreement and published.

4. The rules of revision, or the limit to which revision downward may take place, shall be stated in sufficiently explicit terms and published.

For example, under the last head, if at the stated time of revision it shall be found that the average earnings of a group of workers on a certain piece rate have been "time and two thirds" (or some other predetermined amount) the rate may be cut, but only to a point that will yield the average worker "time and one third" (or some other predetermined amount) as shown by the average of the performance records. That is, the new, reduced rate shall be so set on the basis of the average speed attained by the group that a certain standard of pay is safeguarded. Contrariwise, at the stated time of revision (or between times) any rate that is found to yield average earnings below the standard of pay aimed at, shall be revised upward.

A somewhat elaborate code will have to be developed to protect the interests of the employers as well as those of the workmen in the application of the foregoing principles. The principles or leading rules themselves will require amplification. For one thing, there is the problem of what to do with small groups or single workers where the law of averages is not available. In such cases there should be a lump-sum payment in compensation for loss of earnings when a piece rate which yields extravagant wages is reduced. The method employed might be capitalization of the excess earnings considered as an annuity on the basis of some predetermined rate of interest. Then, again, there is the question of what procedure should be followed when, as often happens, a high grade piece rate workman is temporarily placed on a low grade piece rate job. The rules for such special assignments should be predetermined and published. A special, higher rate for the job cannot (without creating jealousy) be offered in such cases for the benefit of the particular workman; his customary earnings must therefore be safeguarded by calculating how much he ought to earn with due diligence by the established rate and then adding to this a fixed time wage retainer. To illustrate: his customary piece work earnings per hour are 50 cents; what he can be reasonably expected to earn per hour at the temporary piece work is 30 cents; the guaranteed hourly retainer, which he would supplement by his own efforts, would be 20 cents. Where such a retainer

is not paid in these cases, usually the workers "soldier" to a degree (as I have myself seen) which is the despair of foremen. Workers always resent injustice in wage matters, and commonly endeavor "to get even"; although with honorable employers of course no injustice is intended. The rules of order and publicity suggested above would be opposed by many employers, and yet undoubtedly they would be to the advantage of employers as well as wage-earners. It is to the interest of everybody that ways and means be found, as they can be, covering all circumstances to encourage piece rate workers to do their best. These ways and means will not be found by the general mass of managers of industry working without assistance.

The chief practical difficulties in a general plan for protection of piece rate will be those which will arise from the necessity of establishing proper uniformities and proper diversities in piece rate scales as between one shop and another in the same district, and as between different districts for a whole national industry. Here again I think the state should require published rules of procedure, but these rules would have to be arrived at through organized employers and organized employees freely using the methods of collective agreement. As for that matter the whole body of rules suggested above for the protection of piece rate, primarily in the workers' interest, will have to rest ultimately (although the state takes the initiative) upon the basis of unionism and the practice of collective bargaining. Not only must all the cards—not some of them, but all of them—be placed on the table to protect piece rate in the workers' interest, but also the workers must have adequate control as to what those cards shall be. The representatives of the organized workers should inspect the methods of determining the time required on piece rate jobs; they should pass upon the bonus factor; they should audit the record of earnings; and above all they should have a say as to the base time wage embodied in each piece rate. The labor organization and the mechanism of collective bargaining and representation sufficient to perform these tasks (not merely to satisfy labor but because logic and right reason demand it) will have to rest on a broader basis than mere individual workshop boards or committees. To solve the piece rate problem, and all the other problems of industrial life, there must be indeed unionism broadly established and recognized and supported by society. Society must realize that the manifold interests of working men and working women in every

shop cannot be adequately protected unless they appear before their employers by counsel. The outsider, an official of the inter-shop union, is strictly an analogue of legal counsel: and the employer has no more right to object to his intervention on principle than he has a right, when selling a piece of real estate, to object to the purchaser's examining into the title through his lawyer. The working man buys his wage by the exchange of his mental and physical effort, and he has a right through counsel to examine into all the conditions of the deal and through him to state what terms he is willing to accept.

And not only should the working man have the right to do business with his employer by counsel (through the official of his union) but he should actually do so. Therefore, in the absence of a union (as is often the case especially with women workers and the sweated trades generally), the state itself should appoint such counsel, similarly to what is often done in criminal trials. Is it not absurd that in the multitudinous industrial cases, so vastly important in the aggregate, hundreds of thousands of workers who most of all need expert defence are left without any? The hands-off policy, the "let them fight it out" policy in these matters must be absolutely abandoned, not merely in the interest of the workers but in the interest of the employers and of all of us. Of recent days events have brought a condition under which industry will profit greatly by a speedy introduction of the "common rule" into all matters affecting remuneration of labor and other conditions of employment. Employers, legislators, courts, all of us should get some new concepts with respect to labor organization and labor standards and act upon them without delay. Order should be introduced into a realm where hitherto there has been anarchy.

These last matters are to a degree collateral to the proposals made above for compulsory rules of procedure and publicity with respect to piece rate. Further discussion of them is therefore out of place here. What I wish to emphasize now is that, however necessary collective bargaining may be as the basis of adequate protection of piece rate in the worker's interest, published rules of procedure required by law as set forth above are also necessary to the protection of piece rate in society's interest. So long as the methods of piece rate are left in an undefined, chaotic condition there is grave danger that collective bargaining operating under such conditions may seek to solve the tangled problem in reaction-

ary and harmful ways. It is abundantly clear from evidence published of late that in the engineering trades in Great Britain, for example, organized labor has protected piece rate, not by intelligent regulation but by stubborn opposition to its introduction and by outrageous practices of limitation of output. The whole situation was apparently too confused to admit of intelligent regulation: there was no foundation or preparation for the proper exercise of the forms of collective bargaining. What is needed everywhere first of all, therefore, to prevent such things from happening, is the letting in of the light, the opening up of the subject for proper handling, by the laws suggested, which will compel the piece rate accounting, the publication of the scales, the definition of the jobs, and in short the whole analysis of the piece rate problem into its "elements." Then upon such a basis can come the follow-up of collective bargaining properly applied, and, when necessary, public arbitration intelligently applied.

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